

ABSTRACT OF THE DISCLOSURE

Fuse-type and antifuse-type semiconducting-organic-polymer-film-based memory elements for use in memory devices are disclosed. Various embodiments of the present invention employ a number of different techniques to alter the electrical conductance or, equivalently, the resistance, of organic-polymer-film memory elements in order to produce detectable memory-state changes in the memory elements. The techniques involve altering the electronic properties of the organic polymers by application of heat or electric fields, often in combination with additional chemical compounds, to either increase or decrease the resistance of the organic polymers.